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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/384,082	08/26/1999	FUMIO OTOMO	016910/0451	7360

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EXAMINER
DOROSHENK, ALEXA A

ART UNIT	PAPER NUMBER
1764	16

DATE MAILED: 12/05/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/384,082	OTOMO ET AL.	
	Examiner	Art Unit	
	Alexa A. Doroshenk AND	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 September 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 33-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 33-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-6, 10-13 and 15 continue to be rejected under 35 U.S.C. 103(a) as being unpatentable over Jahnke et al. (5,345,756) in view of Rice (4,571,935) as presented in paragraph 6 of Office Action Paper No. 12.

3. Claims 7 and 14 continue to be rejected under 35 U.S.C. 103(a) as being unpatentable over Jahnke et al. (5,345,756) in view of Rice (4,571,935), as applied to claims 1-6, 10-13 and 15, and further in view of Perkins et al. (5,160,096) as presented in paragraph 7 of Office Action Paper No. 12.

4. Claims 8 and 9 continue to be rejected under 35 U.S.C. 103(a) as being unpatentable over Jahnke et al. (5,345,756) in view of Rice (4,571,935), as applied to claims 1-6, 10-13 and 15, and further in view of Iwata et al. (5,327,718) as presented in paragraph 8 of Office Action Paper No. 12.

5. Claim(s) 33-39 and 42-47 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Jahnke et al. (USP 5,345,756) in view of Rice (USP 4,571,935) and further in view of Perkins et al. (USP 5,160,096).

Regarding claim(s) 33, 39 and 46, Jahnke et al. disclose(s) a similar integrated coal gasification combined cycle power generator, the generator comprising:

- a coal gasification system for producing a combustible gas from coal, wherein said gasification system supplies said combustible gas to a gas turbine system (C9/L51-C10/L51);
- said gas turbine system comprises a gas turbine for performing expansion work using said combustible gas, wherein said gas turbine supplies exhaust gas to a heat recovery system (C10/L40-51 & C11/L58-63);
- said heat recovery system performs heat exchange, wherein said heat recovery system uses said exhaust gas supplied from said gas turbine as a heat source, and supplies steam generated in the heat exchange to a steam turbine system (C11/L58-C12/L10);
- said steam turbine system performs expansion work (C10/L40-51), said steam turbine system comprising a condenser to condense said steam from said heat recovery system into water, said water being supplied to a heat exchanger in said coal gasification system, where said water is heated to steam (C12/L22-28).

While Jahnke et al. does disclose that said steam created in a heat exchanger in said coal gasification system is further heated by removing waste heat in another stage of the generator (C9/L11-20 and C12/L28-40), the reference does not explicitly disclose said another stage being at least one high-temperature section of the gas turbine system which is at a temperature higher than a temperature of said steam from said heat exchanger.

Rice teaches a combined cycle power generator wherein steam generated by steam turbine system is used to cool at least one high-temperature section of the gas

turbine system which is at a temperature higher than a temperature of said steam (Abstract) for the purpose of increasing system efficiency by providing effective cooling to said gas turbine and at the same time allowing for steam re-heating and recycle to the steam turbine system.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use steam condensed by a condenser in steam turbine system and heated to steam in a heat exchanger in coal gasification system, in power generator of Jahnke et al., to cool at least one high-temperature section of the gas turbine system which is at a temperature higher than the temperature of said steam, as taught by Rice, for the purpose of increasing system efficiency by providing effective cooling to said gas turbine and at the same time allowing for steam re-heating and recycle to the steam turbine system.

Jahnke et al. in view of Rice disclose(s) all of the claim(s) limitations as set forth above, but the reference(s) do/does not disclose gas turbine system comprising an air compressor that supplies air to at least one high-temperature section of the gas turbine system for the purpose of cooling said high-temperature section, producing a higher-temperature air nor said higher-temperature air being recovered after cooling said high-temperature section and supplied to said heat recovery system.

Perkins et al. teaches a gas turbine system comprising at least one air compressor that supplies air to at least one high-temperature section of the gas turbine system for the purpose of cooling said high-temperature section and producing a

higher-temperature air (C2/53-61) for the purpose of improving system performance by allowing significant increase in the gas turbine inlet temperature.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use at least one air compressor that supplies air to at least one high-temperature section of the gas turbine system for the purpose of cooling said high-temperature section and producing a higher-temperature air, as taught by Perkins et al., in the power generator of Jahnke et al., for the purpose of improving system performance by allowing significant increase in the gas turbine inlet temperature.

While Perkins et al. does not explicitly disclose said higher-temperature air being supplied to a heat recovery system, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use at least part of said higher-temperature air in a heat recovery system of Jahnke et al., as Jahnke et al. discloses utilizing hot gas streams available as a by-product of disclosed generator for the purpose of improving system economics (C11/58-63).

Regarding claim(s) 34 and 35, Jahnke et al. in view of Rice disclose(s) all of the claim limitations as set forth above. Additionally Rice teaches the power generator wherein:

- a higher-temperature steam is produced after cooling said high-temperature section of the gas turbine system with said steam from said heat exchanger, said higher-temperature steam is recovered from said at least one high-temperature section of the gas turbine system and supplied to a steam turbine in said steam turbine system (Abstract); and

- said at least one high-temperature section of the gas turbine is at least one of said gas turbine and a gas turbine combustor (Abstract).

Regarding claim(s) 36, Jahnke et al. in view of Rice disclose(s) all of the claim limitations as set forth above. Additionally Jahnke et al. discloses the power generator further comprising:

- a gasification substance producing unit (156) in said coal gasification system for producing an oxygen gas (160) and a nitrogen gas (154) from air (155), said gasification substance producing unit (156) supplying said oxygen gas (160) to a coal gasification unit (1) in said coal gasification system;
- wherein said coal gasification unit (1) receives said oxygen gas (160) from said gasification substance producing unit (156) and receives coal (7);
- said coal gasification unit (1) burns the coal (7) with the oxygen gas (160) from said gasification substance supplying unit (156), producing said combustible gas and introducing said combustible gas into a cooling unit in said coal gasification system (C9/L51-C10/L51);
- said cooling unit cools said combustible gas from said coal gasification unit (1), said cooling unit being in fluid connection with a gas cleanup unit in said coal gasification system (C9/L51-C10/L51); and
- said gas cleanup unit removes impurities from said combustible gas (C9/L51-C10/L51).

While Jahnke et al. does not explicitly disclose said coal gasification unit receiving coal from a coal supplying unit, a usage of a coal supplying unit is inherent in the disclosed power generator.

Regarding claim(s) 37, Jahnke et al. in view of Rice disclose(s) all of the claim(s) limitations as set forth above. Additionally Jahnke et al. discloses the power generator wherein:

- wherein said coal supplying unit employs nitrogen gas (C4/L5-18).

While Jahnke et al. does not explicitly disclose said nitrogen gas employed in said coal supplying unit originating from said gasification substance producing unit, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use at least part of nitrogen gas form said gasification substance producing unit in said coal supplying unit for the purpose of improving system economic by utilizing as a temperature moderator a gas stream which is available as a by-product of disclosed generator.

Regarding claim(s) 38, Jahnke et al. in view of Rice disclose(s) all of the claim(s) limitations as set forth above. Additionally Jahnke et al. discloses the power generator wherein:

- the nitrogen gas produced in said gasification substance producing unit is supplied to said gas turbine combustor, said nitrogen gas combined therein with said combustible gas (C11/L33-41).

Regarding claim(s) 42 and 43, Jahnke et al. in view of Rice disclose(s) all of the claim(s) limitations as set forth above. Additionally Rice teaches the power generator wherein:

- a higher-temperature steam is produced after cooling said at least one high-temperature section of the gas turbine system with said steam from said heat exchanger (Abstract); and
- said at least one high-temperature section of the gas turbine is at least one of said gas turbine and a gas turbine combustor (Abstract).

While Rice does not explicitly disclose higher-temperature steam being supplied to a heat recovery system, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use at least part of said higher-temperature steam in said heat recovery system for the purpose of improving system economic by utilizing a higher-temperature steam which is available as a by-product of disclosed generator for production of steam which can be used in high pressure steam turbine.

Regarding claim(s) 44, Jahnke et al. in view of Rice disclose(s) all of the claim(s) limitations as set forth above. Additionally Jahnke et al. discloses the power generator further comprising:

- a gasification substance producing unit (156) in said coal gasification system for producing an oxygen gas (160) and a nitrogen gas (154) from air (155), said gasification substance producing unit (156) supplying said oxygen gas (160) to a coal gasification unit (1) in said coal gasification system;

- wherein said coal gasification unit (1) receives said oxygen gas (160) from said gasification substance producing unit (156) and receives coal (7);
- said coal gasification unit (1) burns the coal (7) with the oxygen gas (160) from said gasification substance supplying unit (156), producing said combustible gas and introducing said combustible gas into a cooling unit in said coal gasification system (C9/L51-C10/L51);
- said cooling unit cools said combustible gas from said coal gasification unit (1), said cooling unit being in fluid connection with a gas cleanup unit in said coal gasification system (C9/L51-C10/L51); and
- said gas cleanup unit removes impurities from said combustible gas (C9/L51-C10/L51).

While Jahnke et al. does not explicitly disclose said coal gasification unit receiving coal from a coal supplying unit, a usage of a coal supplying unit is inherent in the disclosed power generator.

Regarding claim(s) 45, Jahnke et al. in view of Rice disclose(s) all of the claim(s) limitations as set forth above. Additionally Jahnke et al. discloses the power generator wherein:

- wherein said coal supplying unit employs nitrogen gas (C4/L5-18).

While Jahnke et al. does not explicitly disclose said nitrogen gas employed in said coal supplying unit originating from said gasification substance producing unit, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use at least part of nitrogen gas form said gasification substance

producing unit in said coal supplying unit for the purpose of improving system economic by utilizing as a temperature moderator a gas stream which is available as a by-product of disclosed generator.

Regarding claim(s) 47, Jahnke et al. in view of Rice disclose(s) all of the claim(s) limitations as set forth above. Additionally Jahnke et al. discloses the power generator wherein:

- said higher temperature steam is supplied to said heat recovery system and to said steam turbine (C11/L58-C12/L10).

6. Claim(s) 40 and 41 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Jahnke et al. (USP 5,345,756) in view of Rice (USP 4,571,935) and further in view of Perkins et al. (USP 5,160,096), as applied to claim(s) 33-39 and 42-47 above, and further in view of Iwata et al. (USP 5,327,718).

Regarding claim(s) 40 and 41, Jahnke et al. in view of Rice disclose(s) all of the claim(s) limitations as set forth above, but the reference(s) do/does not disclose power generator further comprising detector for detecting a calorific value of said combustible gas from said gas cleanup unit nor a controller for controlling the flow rate of said combustible gas and/or high pressure air from an air compressor based on said calorific value.

Iwata et al. teaches a gas turbine system comprising a detector for detecting a calorific value of combustible gas and a controller for controlling the flow rate of said combustible gas and/or air supplied to combustor based on said calorific value (C3/L32-

48) for the purpose of improving combustor combustion efficiency and lowering NO_x production (C3/L60-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a detector for detecting a calorific value of combustible gas and a controller for controlling the flow rate of said combustible gas and/or air supplied to combustor based on said calorific value, as taught by Iwata et al., in the power generator of Jahnke et al., for the purpose of improving combustor combustion efficiency and lowering NO_x production.

Response to Arguments

7. Applicant's arguments filed September 20, 2001 have been fully considered but they are not persuasive.

Claim Objections

The objection to claims 2-9 and 11-15 are withdrawn due to applicant's amendments to the claims.

35 USC 112, Second Paragraph

The rejection of claims 5-9 and 13 under 35 USC 112, second paragraph are withdrawn due to applicant's amendments to the claims.

35 USC 103

With regard to claims 1-6, 10-13 and 15, applicant argues that Rice fails to cure the deficiencies of Jahnke et al. because Rice fails to suggest that that steam from a steam turbine system is supplied to a heat exchanger in a coal gasification system,

heated to steam and supplied to more than one high-temperature section of a gas turbine as recited in claim 1.

The examiner respectfully disagrees with applicant's argument in that the applicant as argued the references in a manner which is different than how the examiner has ejected the claims. The examiner would like to restate the combination of references in the rejection in order to clarify how the references were combined with regard to the steam and heat exchange relationships.

Jahnke et al. teaches all of the elements as discussed in the rejection, including a steam turbine system comprising a condenser which condenses the steam into water. The water is then supplied to a heat exchanger in the coal gasification system and heated to steam. Jahnke et al. further teach that the steam from the heat exchanger in the gasification system is further sent to accomplish heat exchange in the gas turbine system. Jahnke et al. are silent as to supplying the steam from the heat exchanger in the gasification system to more than one section of the gas turbine.

Rice, as admitted by applicant, teaches cooling multiple sections of the gas turbine with steam. Though Rice uses steam directly from the steam turbine, Rice is relied upon to teach that it is known for steam to be used to cool multiple sections of the gas turbine in order to increase system efficiency. Since Jahnke et al. already teaches using steam from heat exchanger in the gasification system to cool one section of the gas turbine system, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Rice's teaching of cooling multiple sections of the

turbine system with steam and modifying the steam cooling of Jahnke et al. to multiple sections of the turbine in order to increase system efficiency.

With regard to the rejections of claims 7-9 and 14, applicant only states that the additional references used in those rejections fail to cure the deficiencies of Jahnke et al. and Rice and does not make arguments regarding the additional references used to reject those claims.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 703-305-0074. The examiner can normally be reached on Monday - Thursday from 8:30 AM - 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

JERRY D. JOHNSON
PRIMARY EXAMINER
GROUP 1100

AAD
November 29, 2001